



(43) International Publication Date  
7 October 2004 (07.10.2004)

PCT

(10) International Publication Number  
**WO 2004/084664 A3**

(51) International Patent Classification<sup>7</sup>: **F41H 5/04**, 1/04

(21) International Application Number:  
PCT/CA2004/000444

(22) International Filing Date: 29 March 2004 (29.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/457,927 28 March 2003 (28.03.2003) US  
60/520,641 18 November 2003 (18.11.2003) US

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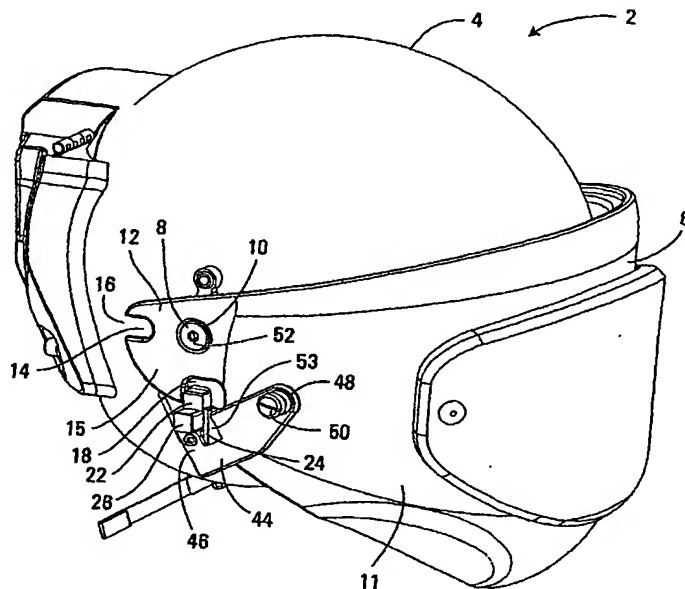
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[Continued on next page]

(54) Title: HEAD PROTECTOR



(57) Abstract: A head protection system comprises a helmet shell (4), a visor mounting (5) for pivotally mounting a visor (6) to the shell to enable the visor to be moved between raised and lowered positions, and a retainer (8) for releasably retaining the visor to the helmet. The system includes a visor adapted for mounting on the shell which comprises a substrate of transparent thermoplastic material (108) and a backing substrate (130) comprising a plurality of layers of high performance, ballistic resistant material. The system may further include a second visor which can be releasably connected to the shell using the same visor mounting and which may have a different construction and primary function.



(81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK,

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declaration under Rule 4.17:**

— *of inventorship (Rule 4.17(iv)) for US only*

**Published:**

— *with international search report*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) **Date of publication of the international search report:**

18 November 2004

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/CA2004/000444

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 F41H5/04 F41H1/04

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 F41H A42B A62B G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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Y	US 3 573 150 A (BROUTMAN ET AL.) 30 March 1971 (1971-03-30) abstract column 2, line 31 - line 34 column 6, line 7 - line 8; figures 1-3  -/--	2-25, 47-61

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \* & \* document member of the same patent family

Date of the actual completion of the international search

21 September 2004

Date of mailing of the international search report

07. 10. 2004

Name and mailing address of the ISA

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International Application No  
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International Application No  
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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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International Application No  
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CA2004/000444

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:  
  
1-114, 117-130, 144-151
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-25,47-61

A head protection system comprising a helmet shell, mounting means for pivotally mounting a visor, retaining means for retaining said visor and a visor comprising a layer of transparent material and at least one layer of ballistic resistant material.

2. Claims: 26-46,99

A helmet comprising a shell and mounting means for pivotally mounting a shield member to said shell and a locking system.

3. Claims: 62-73,144,149-151

A helmet comprising a shell and strap means.

4. Claims: 74-79,87-90,100-114

A helmet comprising a shell, an electrically powered system and a power controller.

5. Claims: 80-86

A helmet comprising a shell, a visor, a moisture reducing means treatment on the surface thereof and electrically powered means for providing ventilation.

6. Claims: 91-98

A helmet comprising a shell, a shield member, coupling means and shock absorption means.

7. Claims: 115-116

A protective helmet having a side portion which covers the ear of the user and a microphone positioned on said side portion.

8. Claims: 117-130

A head protector comprising a helmet shell having a head cavity, a liner, at least one retainer and a packing member.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

**9. Claims: 131-143**

A head protector comprising a helmet shell and a shield and coupling means for slidably engaging and disengaging the shield to and from the helmet.

**10. Claims: 145-148**

A protective system comprising a helmet and a plurality of visors.

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA2004/000444

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